4-22-1985

Fluid/Friction Brake Dynamometer

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Informative Abstract

The fluid/friction brake dynamometer is an instrument used to produce performance data on various motors and motor/gearbox combinations. This data is the basic engineering information needed for selecting the best combination of motors and gearbox ratios for various applications in battery powered ride-on toys.

The dynamometer provides raw data in the form of torque, speed, electric current and potential. The torque in foot-pounds and the speed in revolutions per minute comprise the output data. The electric current , in amps, and the potential, in volts, comprise the input data. From the input and output data, complete performance curves are generated. These curves show the torque along the x-axis and the speed, current, voltage, power and efficiency are plotted on the y-axis.

These curves provide a complete relationship of all factors used in determining motor and gearbox performance. At any given load level (torque) a vertical line can be drawn which crosses the lines representing speed, current, voltage, power and efficiency. At the intersections, a horitzontal line is drawn across to the appropriate scale and read. Also, horizontal lines can be drawn from any scale along the y-axis to intersect it's curve. Then a vertical line is drawn to connect any other curve and traced horizontally back to it's scale and read. For example, to find the percent efficiency at 15 amps, a horizontal line is drawn from 15 amp mark to connect the current curve, from there a vertical line is drawn to connect the efficiency curve, then a horizontal line is drawn back to read the efficiency scale.

FLUID/FRICTION BRAKE DYNAMOMETER

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MET-497

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April 22, 1985

ABSTRACT

This dynamometer is used to produce performance curves on motors and gearboxes used for battery powered ride-on toys. These curves provide information needed for selection of different motors and gearbox ratios for specific applications.

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